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REVIEW

Meralgia paresthetica: A result of tight new trendy low cut trousers ('taille basse')

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KEYWORDS
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Abstract Meralgia paresthetica is an entrapment neuropathy involving the lateral femoral cutaneous nerve of the thigh. Patients complain of a persistent burning sensation, tingling and aching pain, and hypersensitivity or hyposensitivity in the anterolateral aspect of the thigh. Numerous direct and indirect causes for the disease have been suggested in the literature.

We present 12 cases that were diagnosed to have meralgia paresthetica due to tight new fashion low cut trousers ('taille basse'). The diagnosis was confirmed by injecting a small amount of a short acting local anesthetic around the lateral femoral cutaneous nerve which alleviated the symptoms for several hours. Electrophysiologic studies were sensitive in 83.3% of the cases.

All cases were treated successfully using conservative methods, namely avoiding tight trousers, local steroid infiltration and weight reduction.

Introduction

Meralgia paresthetica is a painful mononeuropathy of the lateral femoral cutaneous nerve (LFCN) that manifests clinically as numbness, burning, itching, or pain over the anterior and lateral aspects of the thigh.[25] It is commonly due to focal entrapment of this nerve as it passes through the inguinal ligament. It typically occurs in isolation. It can result from iatrogenic injury to the LFCN during orthopedic procedures that include bone graft harvesting, the insertion of pins in the anterior superior iliac spine during external fixation of the pelvis, and during anterior surgical approaches to the hip and pelvis. Rarely, it has other etiologies such as direct trauma to the ilium during accidents, stretch injury, or ischemia. Additional causes include pressure from belts, braces, trusses and tight trousers.

Materials and methods

We reviewed the clinical notes of all the cases diagnosed to have meralgia paresthetica. Over a period of 5 years 19 cases were retrieved. The involvement of the LFCN was

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confirmed in each case by injecting a small amount of bupivacaine (5 cc) around the LFCN where it passed near the anterior superior iliac spine. The accuracy of the injection was confirmed by obtaining anterolateral thigh paresthesia and in each case the symptoms were completely relieved for several hours.

Among the patients there were 12 young females, age range 18—26 years, where the primary causative factor was new fashion low cut trousers ('taille basse'), only two patients were overweight with a body mass index of 27 kg/m^2.

Electro-physiologic studies were requested on all patients; however, they were only positive in 10 out of the 12 patients.

All of the 12 patients where the causative factor was new fashion low cut trousers ('taille basse') were treated conservatively, namely avoiding tight trousers, local steroid infiltration (average two injections of 40 mg of Methylprednisolone acetate) around the nerve at 10 days interval and weight reduction in the two patients who were overweight. All were relieved of their symptoms after an average of 21 days (10—40 days) Table 1.

Among the other patients, there were four patients who were obese with a body mass index of more than 30 kg/m^2. Three other patients had iatrogenic injury to the LFCN during anterior iliac bone graft harvesting.

In the four patients who were obese, weight reduction and local steroid infiltration of 40 mg of Methylprednisolone acetate around the nerve achieved full recovery except for one patient in whom surgical intervention in the form of decompression was necessary but resulted in marked improvement of his symptoms.

However, in the cases where there was injury to the LFCN following anterior iliac bone harvesting, surgery was necessary confined to decompression and neurolysis.

Discussion

Meralgia paresthetica, also known as the Bernhardt—Roth syndrome, is an entrapment mononeuropathy of the LFCN.[4,31] Despite the widespread recognition of meralgia paresthetica, its diagnosis has become obscure and few physicians are aware of the condition. Meralgia paresthetica is often asymptomatic for a long period, and is frequently unrecognized even when it is symptomatic.[19] The entrapment of the LFCN produces pain, paresthesia and sensory loss over the anterolateral aspect of the thigh.[3,16,34]

The primary cause of meralgia paresthetica remains obscure although it is associated with many etiologic factors. A variety of causes for meralgia paresthetica have been reported, including direct trauma, seat belt injurym,[26] laparoscopic inguinal hernia repair,[7] myomectomy,[15] cholecystectomy,[38] abdominal distention,[10] limb length discrepancy,[12] metastatic carcinoma in the iliac crest,[34] retroperitoneal tumors,[11] and idiopathic causes.[24]

Table 1 Meralgia paresthetica; demographic values and modalities of treatment

Patient	Age	Sex	Weight (kg)	Height (cm)	Body mass index (kg/m^2)	Etiology	Treatment
1	21	F	62	160	24.2	taille basse	2 Steroid injections
2	18	F	68	170	23.5	taille basse	2 Steroid injections
3	22	F	79	170	27.3	taille basse Over weight	2 Steroid injections Weight reduction
4	25	F	67	164	24.9	taille basse	1 Steroid injection
5	23	F	57	160	22.3	taille basse	3 Steroid injections
6	18	F	59	166	21.4	taille basse	3 Steroid injections
7	19	F	74	165	27.1	taille basse Over weight	3 Steroid injections Weight reduction
8	21	F	52	160	20.3	taille basse	1 Steroid injection
9	25	F	57	166	20.6	taille basse	3 Steroid injections
10	26	F	54	162	20.5	taille basse	2 Steroid injections
11	24	F	58	170	20.1	taille basse	1 Steroid injection
12	25	F	59	161	22.7	taille basse	2 Steroid injections
13	33	F	79	160	30.9	Obesity	2 Steroid injections Weight reduction
14	29	F	80	158	32.0	Obesity	3 Steroid injections Weight reduction
15	38	M	89	169	31.2	Obesity	2 Steroid injections Weight reduction
16	42	M	91	172	30.8	Obesity	3 Steroid injections Weight reduction Surgical decompression
17	18	M	85	188	24.0	Anterior iliac bone graft	3 Steroid injections Surgical intervention
18	62	F	54	158	21.6	Anterior iliac bone graft	3 Steroid injections Surgical intervention
19	59	F	70	168	24.8	Anterior iliac bone graft	3 Steroid injections Surgical intervention

Obesity and pregnancy are other causes acting through exerting pressure on the lateral cutaneous nerve.[19] Meralgia paresthetica can sometimes occur as a rare complication of heart operations, possibly related to trauma caused by positioning of the lower extremities during vein harvesting.[28] Neuropathy involving the lateral cutaneous nerve of the thigh is another cause. Neuropathy of diabetes mellitus[26] and thyroid diseases[32] are such examples.

However, the most common causes are tight clothing,[6] and iatrogenic complications after thoracoabdominal surgery,[1,28] and iliac bone graft harvesting.[35]

These many causes increase the susceptibility of the LFCN to compression and injury rendering it vulnerable.[2,9] This vulnerability is associated with the unique course of the nerve as it exits the pelvis.[22,24]

It is important to note the anatomic variation of the nerve with respect to diagnosing and treating the syndrome.[29] Two studies have shown that the course of the LFCN is variable, especially in the area of the anterior superior iliac spine (ASIS).[4,10] In a comprehensive anatomical study by Mathew C. Grothaus et al.,[13] a detailed description of the course of the LFCN was presented. The measurements obtained in the study enabled the determination of a specific 'danger zone' based on the anatomic landmarks of the ASIS, inguinal ligament, distance from a line drawn vertically from the ASIS, and the distance from the ASIS distally along the sartorius muscle, especially when the nerve branches proximal to the inguinal ligament Figs. 1 and 2.

It is in this danger zone where the direct compression of the LFCN occurs by the waistband of the low cut fashion trousers ('taille basse') Fig. 3.

Several authors have reported on patients with traumatic LFCN injury with varying degrees of disability.[25,27] The usual traumatic site for the LFCN is at the inguinal ligament.[18,21,23]

Successful treatment of meralgia paresthetica depends on correct diagnosis. Meralgia paresthetica can lead to significant disability when the diagnosis is missed or even delayed.

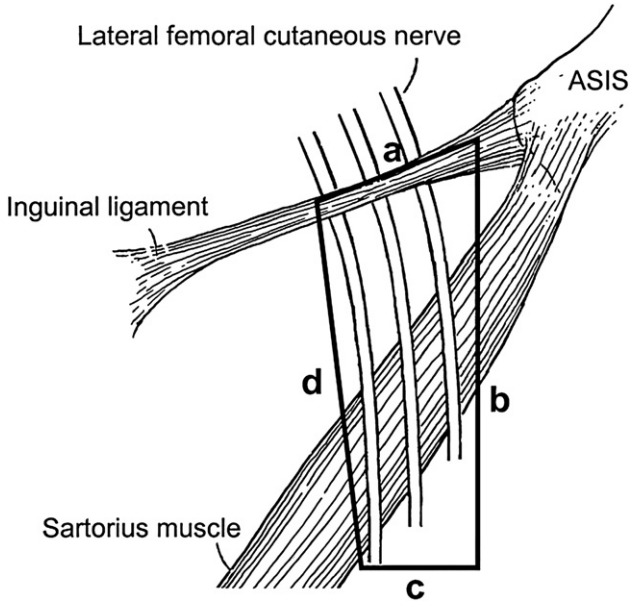

Figure 1 Anatomical variations of the lateral femoral cutaneous nerve.

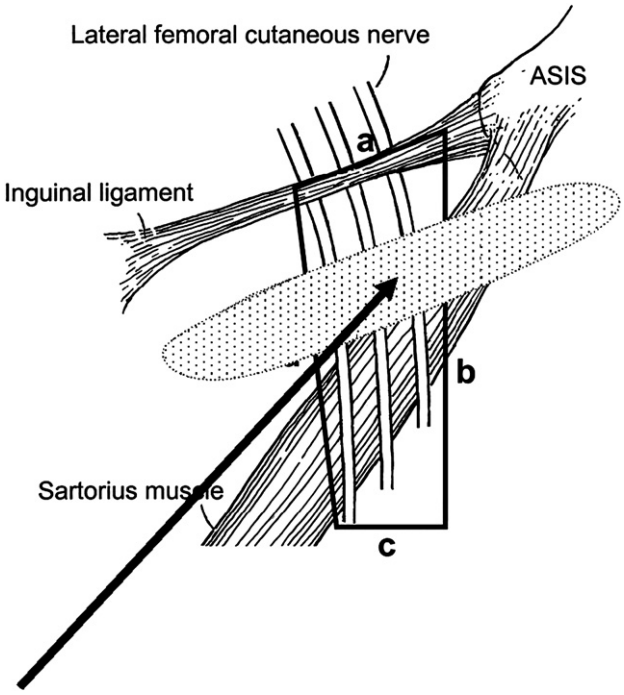

Figure 2 Area of compression of the LFCN by ''taille basse'' trousers. (danger zone)

Although the diagnosis of meralgia paresthetica is based on clinical suspicion it can be confirmed by electrophysiologic studies, neurography, and recording of somatosensory evoked potentials that reveal decreased amplitudes on the affected side.[20,30] Many factors influence the nerve conduction technique like the variation of the course of the nerve, age, or the interference of an elevated body mass index.[8] It is necessary to review any physiologic, anatomic, and psychosocial factors that might influence the information obtained from the diagnosis.[5,14] Nerve conduction of the LFCN has the benefits of being safe, reliable and inexpensive. However, a negative NCS does not rule out the LFCN entrapment. In our patients the NCS were sensitive in 10 out of the 12 patients (83.3%).

The diagnosis can furthermore be confirmed by a diagnostic block of the LFCN with a local anesthetic solution.[17] In our patients the involvement of the LFCN was confirmed in each case by injecting a small amount of bupivacaine (5cc) around the LFCN where it passed near the anterior superior iliac spine. The accuracy of the injection was confirmed by obtaining anterolateral thigh paresthetica and, in each case, the symptoms were completely relieved for several hours.

However, it should be noted that response to a diagnostic nerve block does not rule out a symptomatic lesion such as one due to malignancy.

The initial treatment of meralgia paresthetica is conservative by correcting mechanical or postural problems (weight loss, looser clothing), the use of local anesthetics and steroids, bed rest, anti-inflammatory drugs and single or multiple therapeutic nerve blocks.[17] Total successes were achieved with conservative treatment in all of our patients, namely avoiding tight low cut trousers, local steroid

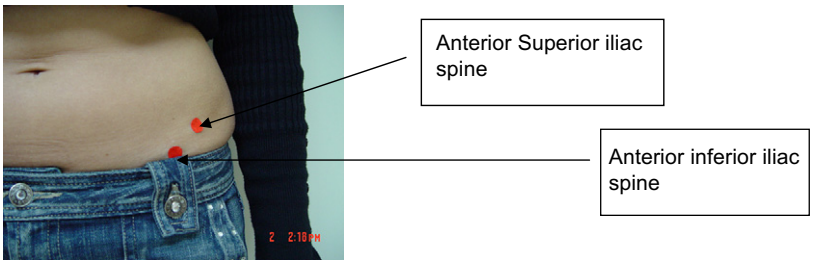

Figure 3 Direct compression of the LFCN occurs by the waist band of the Low cut fashion trousers (''taille basse'').

infiltration of the LFCN and weight reduction in the patients who were overweight.

Patients who fail to respond to conservative therapy should be considered for surgery. The high rate of success of conservative therapy should be kept in mind when deciding on operative intervention. Surgery is advised only when patients have severe and persistent pain despite conservative management.

There is insufficient data supporting the efficacy and safety of operative intervention and the results are unclear.[26] Operative treatments with either neurolysis or transaction of the LFCN should only be considered as a last resort.[36,37] Sectioned nerves often have painful neuromas develop that could be more troublesome than the meralgia. In addition, the resultant sensory defect over the outer aspect of the thigh may be as disturbing as the original complaint,[33] even when the pain is relieved by sectioning the nerve.

Conclusion

Meralgia paresthetica is an entrapment neuropathy involving the lateral femoral cutaneous nerve of the thigh. It can lead to significant disability when the diagnosis is missed or even delayed. The treating physician should have a high index of suspicion in order to reach a proper diagnosis. The diagnosis can be confirmed by a diagnostic block of the LFCN with a local anesthetic solution that will facilitate treatment and avoid unnecessary diagnostic evaluations. Early diagnosis facilitates successful treatment.

We presented 12 cases that were diagnosed to have meralgia paresthetica due to tight new fashion low cut trousers ('taille basse') that were treated conservatively, namely weight reduction, looser trousers and local steroid infiltration around the LFCN, with good relief of symptoms.

Conflicts of interest
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Ethical approval
Not required.

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